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ROSS BARNETT RESERVOIR, JACKSON, MADISON, AND RANKIN COUNTIES, MISSISSIPPI

PACIFIC NORTHWEST ENVIRONMENTAL
RESEARCH LABORATORY

PREPARED FOR
NATIONAL ENVIRONMENTAL RESEARCH CENTER

JUNE 1975

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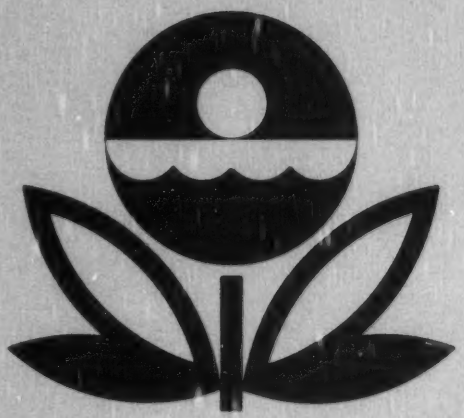

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16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

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REPORT

ON

ROSS BARNETT RESERVOIR

JACKSON, MADISON, AND RANKIN COUNTIES

MISSISSIPPI

EPA REGION IV

WORKING PAPER NO. 362

WITH THE COOPERATION OF THE

MISSISSIPPI AIR AND WATER POLLUTION

CONTROL COMMISSION

AND THE

MISSISSIPPI NATIONAL GUARD

JUNE, 1975

CONTENTS

	Page
Foreword	ii
List of Mississippi Study Lakes	iv
Lake and Drainage Area Map	v
Sections	
I. Conclusions	1
II. Lake and Drainage Basin Characteristics	3
III. Lake Water Quality Summary	4
IV. Nutrient Loadings	8
V. Literature Reviewed	13
VI. Appendices	14

FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the Mississippi Air and Water Pollution Control Commission for professional involvement and to the Mississippi National Guard for conducting the tributary sampling phase of the Survey.

Glen Wood, Jr., Director, and John Smith, Deputy Director of the Air and Water Pollution Control Commission; and John Harper, Don Scott, John Sigman, and Dwight Wylie of the Water Division provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

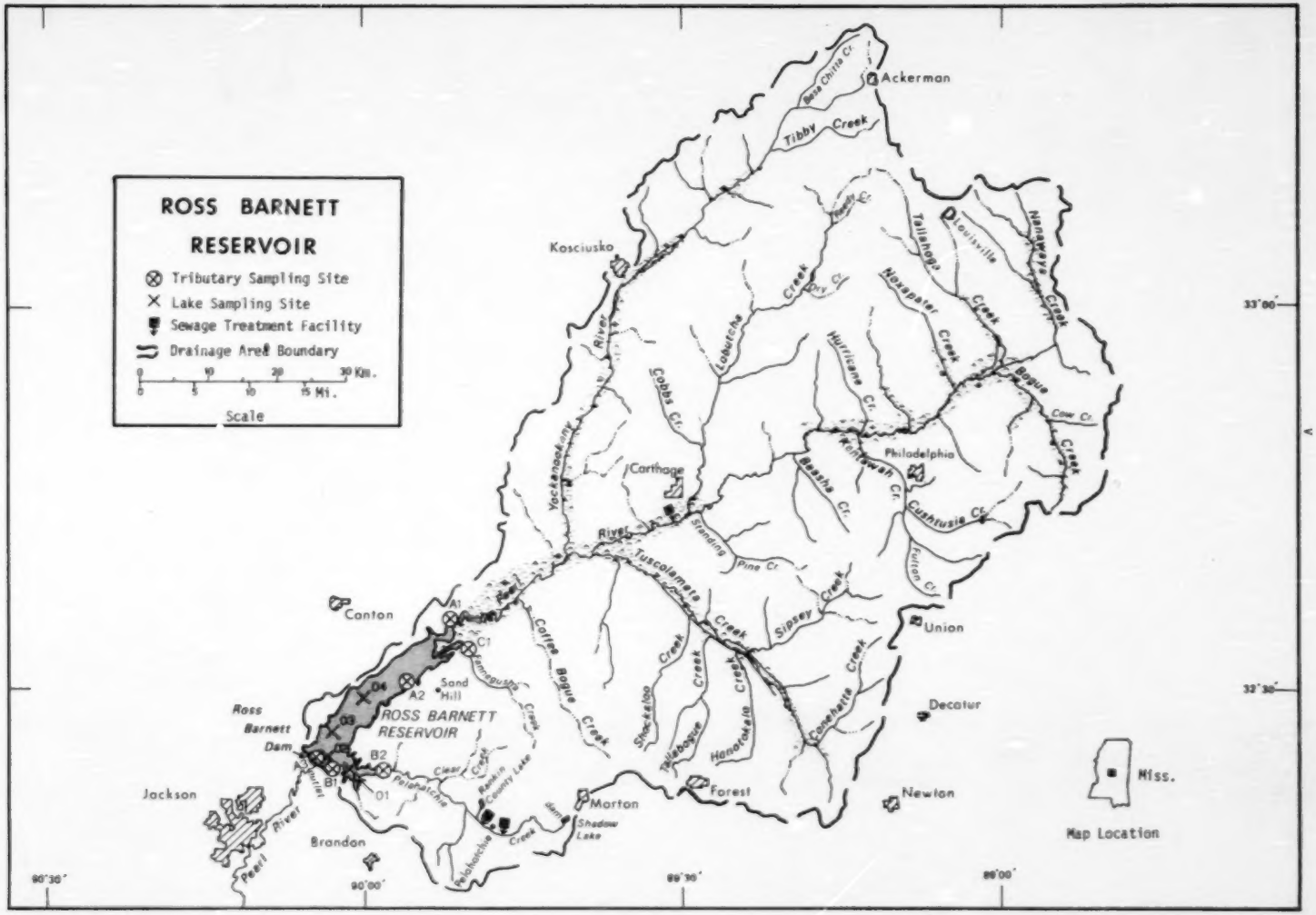
Major General E. A. Beby Turnage, the Adjutant General of Mississippi, and Project Officer Major Thomas D. Nichols, who directed the volunteer efforts of the Mississippi National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF MISSISSIPPI

LAKE NAME	COUNTY
Arkabutla	DeSoto, Tate
Enid	Yalobusha
Grenada	Calhoun, Grenada, Yalobusha
Pickwick	Tishominga
Ross Barnett	Jackson, Madison, Rankin
Sardis	Lafayette, Panola


ROSS BARNETT RESERVOIR
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Drainage Area Boundary
0 10 20 30 Km.
0 5 10 15 Mi.
Scale
ROSS BARNETT RESERVOIR
Ross Barnett Dam
Ackerman
Kosciusko
Carthage
Philadelphia
Canton
Union
Decatur
Forest
Newton
Morton
Jackson
Brandon
Sand Hill
Shadow Lake
Tibby Creek
Yockanookany River
Tuscolameta Creek
Strong River
Pearl River
Coffee Bogue Creek
Miss.
Map Location
33°00'
32°30'
90°30'
90°00'
89°30'
89°00'

ROSS BARNETT RESERVOIR

STORET NO. 2804

I. CONCLUSIONS

A. Trophic Condition:

Survey data show that Ross Barnett Reservoir is eutrophic. Of the five Mississippi water bodies sampled in 1973, Ross Barnett Reservoir ranked second in overall trophic quality when compared using a combination of six parameters*. One of the water bodies had less median total phosphorus, none of the others had less median dissolved phosphorus and median inorganic nitrogen, one had greater mean Secchi disc transparency, but none of the others had greater mean chlorophyll a. Depression of dissolved oxygen with depth occurred at sampling stations 1 and 2 in June and August.

During their visits to the reservoir, Survey limnologists did not observe any nuisance conditions other than turbidity.

B. Rate-Limiting Nutrient:

Due to a loss of nutrients in the sample before the algal assay could be conducted, the results are not representative of conditions in the reservoir at the time the sample was taken (06/14/73). However, the reservoir data indicate phosphorus limitation at stations 2, 3, and 4 and nitrogen limitation at station 1 in June; phosphorus limitation at all stations in August; and

* See Appendix A.

nitrogen limitation at all stations, except station 3, in November.

C. Nutrient Controllability:

1. Point sources--During the sampling year, Ross Barnett Reservoir received a total phosphorus loading more than 3½ times that proposed by Vollenweider (Vollenweider and Dillon, 1974) as a eutrophic loading (see page 12).

It is estimated that the known point sources contributed less than 2% of the phosphorus load. Even complete removal of phosphorus at these sources would only lower the loading from the existing 3.56 g/m^2/year to 3.50 g/m^2/year, or 3½ times the eutrophic loading, and it is not likely that point-source phosphorus control would result in any significant improvement in the trophic condition of the reservoir.

2. Non-point sources--It is calculated that non-point sources contributed more than 98% of the total phosphorus load to the reservoir during the sampling year.

The phosphorus export rates of Pelahatchie Creek and Fannegusha Creek were markedly greater than that of the Pearl River (see page 11). While the higher export rate of Pelahatchie Creek may have resulted from underestimation of the phosphorus loads from the Pelahatchie lagoons, the even higher rate of Fannegusha Creek apparently is due to agricultural practices in that drainage.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

A. Lake Morphometry††:

1. Surface area: 121.41 kilometers^2.
2. Mean depth: 3.7 meters.
3. Maximum depth: 15.2 meters.
4. Volume: 449.217 x 10^6 m^3.
5. Mean hydraulic retention time: 49 days.

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)*	Mean flow (m^3/sec)*
Pearl River	6,904.9	90.3
Pelahatchie Creek	530.9	6.1
Fannegusha Creek	19[illegible].8	2.6
Minor tributaries & immediate drainage -	17.0	7.0
Totals	7,648.6	106.0

2. Outlet -

Pearl River	7,770.0**	106.0

C. Precipitation***:

1. Year of sampling: 148.1 centimeters.
2. Mean annual: 124.1 centimeters.

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† Table of metric conversions--Appendix B.
†† Smith, 1973.
* For limits of accuracy, see Working Paper No. 175, "...Survey Methods, 1973-1976".
** Includes area of lake.
*** See Working Paper No. 175.

III. LAKE WATER QUALITY SUMMARY

Ross Barnett Reservoir was sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from four stations on the lake and from a number of depths at each station (see map, page v). During each visit, a single depth-integrated (4.6 m or near bottom to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the first visit, a single 18.9-liter depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 7.9 meters at station 1, 11.6 meters at station 2, 4.6 meters at station 3, and 4.6 meters at station 4.

The sampling results are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR ROSS BARNETT RESERVOIR
STORET CODE 2804

PARAMETER	1ST SAMPLING (6/14/73) 4 SITES RANGE	MEAN	MEDIAN	2ND SAMPLING (8/27/73) 4 SITES RANGE	MEAN	MEDIAN	3RD SAMPLING (11/ 2/73) 4 SITES RANGE	MEAN	MEDIAN
TEMP (C)	23.7 - 29.8	27.3	27.8	26.8 - 29.9	28.2	28.1	17.2 - 19.1	18.3	18.7
DISS OXY (MG/L)	0.8 - 7.5	4.1	3.4	0.4 - 7.8	4.7	5.6	7.6 - 8.8	8.3	8.4
CNDCTVY (MCROMO)	45. - 122.	63.	60.	58. - 70.	63.	63.	45. - 66.	53.	50.
PH (STAND UNITS)	6.0 - 8.0	6.7	6.6	6.2 - 7.9	7.1	7.2	6.9 - 7.3	7.1	7.1
TOT ALK (MG/L)	9. - 25.	14.	14.	14. - 30.	19.	19.	14. - 21.	17.	16.
TOT P (MG/L)	0.059 - 0.246	0.085	0.068	0.022 - 0.048	0.032	0.027	0.034 - 0.047	0.040	0.038
ORTHO P (MG/L)	0.006 - 0.097	0.019	0.011	0.004 - 0.018	0.007	0.006	0.006 - 0.012	0.008	0.008
NO2+NO3 (MG/L)	0.100 - 0.160	0.133	0.130	0.040 - 0.070	0.053	0.060	0.030 - 0.050	0.041	0.040
AMMONIA (MG/L)	0.150 - 0.550	0.233	0.190	0.040 - 0.240	0.095	0.070	0.030 - 0.060	0.044	0.040
KJEL N (MG/L)	0.500 - 1.500	0.833	0.800	0.800 - 1.400	1.060	1.100	0.500 - 0.800	0.592	0.600
INORG N (MG/L)	0.250 - 0.710	0.365	0.320	0.080 - 0.300	0.149	0.140	0.060 - 0.100	0.085	0.080
TOTAL N (MG/L)	0.600 - 1.640	0.966	0.940	0.850 - 1.470	1.113	1.140	0.540 - 0.840	0.633	0.640
CHLRPYL A (UG/L)	3.4 - 9.1	5.9	5.5	11.9 - 14.9	13.2	13.0	9.1 - 12.4	10.9	11.0
SECCHI (METERS)	0.7 - 0.8	0.7	0.7	0.9 - 1.3	1.1	1.1	0.9 - 1.1	1.0	1.0

B. Biological characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
06/14/73	1. Melosira sp.	936
	2. Stephanodiscus sp.	71
	3. Cryptomonas sp.	53
	4. Flagellates	53
	5. Scenedesmus sp.	35
	Other genera	176
	Total	1,324
08/27/73	1. Oscillatoria sp.	2,419
	2. Raphidiopsis (?) sp.	2,032
	3. Lyngbya sp.	403
	4. Mallomonas sp.	210
	5. Cyclotella sp.	194
	Other genera	708
	Total	5,966
11/02/73	1. Dactylococcopsis sp.	1,569
	2. Melosira sp.	1,119
	3. Microcystis sp.	733
	4. Flagellates	720
	5. Kirchneriella sp.	566
	Other genera	3,189
	Total	7,896

2. Chlorophyll a -

Sampling Date	Station Number	Chlorophyll a (µg/l)
06/14/73	01	6.6
	02	3.4
	03	4.5
	04	9.1
08/27/73	01	14.9
	02	12.1
	03	13.9
	04	11.9
11/02/73	01	11.8
	02	9.1
	03	12.4
	04	10.2

C. Limiting Nutrient Study:

A 58% loss of inorganic nitrogen and a 54% loss of total phosphorus occurred in the assay sample between the time of collection and the beginning of the assay. Consequently, the assay results are not representative of conditions in the reservoir at the time the sample was taken (06/14/73).

The reservoir data indicate a spatial and temporal combination of limiting nutrients, although it will be noted that station 1, nearest the point sources, tended toward nitrogen limitation while the stations further away tended toward phosphorus limitation.

Following is a tabulation of the mean inorganic nitrogen/orthophosphorus ratios for each of the stations and sampling times with the indicated limiting nutrient in parentheses.

Station	06/14/73	08/27/73	11/02/73
1	11/1 (N)	19/1 (P)	8/1 (N)
2	27/1 (P)	25/1 (P)	12/1 (N)
3	20/1 (P)	22/1 (P)	14/1 (P)
4	33/1 (P)	16/1 (P)	10/1 (N)

Nitrogen limitation, as indicated by the in-lake nitrogen to phosphorus ratios, does not necessarily mean that the trophic condition of the lake can be improved by controlling nitrogen inputs. In most cases, the apparent condition of nitrogen-limitation results from excessive phosphorus inputs from point sources and is often accompanied by a corresponding increase in primary production. In such cases, the reversal of the enriched condition depends upon phosphorus control, not nitrogen control.

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the Mississippi National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v). Sampling was begun in August, 1973, and was completed in August, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Mississippi District Office of the U.S. Geological Survey for the tributary sites nearest the lake. The data from sampling sites A-2 (Pearl River) and B-1 (Pelahatchie Creek) were not used in this report. Station A-2 was found to be essentially a lake site, and station B-1 is not an outlet of the reservoir. Therefore, the drainage areas and flows of each were subtracted from the appropriate totals.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Nutrient loads shown are those measured minus point-source loads, if any.

Nutrient loads for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the nutrient loads, in $kg/km^2/year$, at station C-1 and multiplying by the ZZ area in km^2.

The operators of the Pelahatchie wastewater treatment plants provided monthly effluent samples and estimated flow data. The Town of Carthage did not participate in the Survey, and nutrient loads were

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* See Working Paper No. 175.

estimated at 1.134 kg P and 3.401 kg N/capita/year.

A. Waste Sources:

1. Known municipal -

Name	Pop. Served	Treatment	Mean Flow (m^3/d)	Receiving Water
Pelahatchie "A"*	300	lagoon	41.6	Pelahatchie Creek
Pelahatchie "B"*	1,000	lagoon	2,112.6	Pelahatchie Creek
Carthage**	3,031	lagoon	1,147.2	Pearl River

2. Known industrial - None with separate treatment facilities.

* Murphy, 1973; more than 25% of the waste load to lagoon "B" is contributed by industry (poultry processing).
** Anonymous, 1971; population based on 1970 census, and flow estimated at 0.3785 m^3/capita/day.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/ yr	% of total
a. Tributaries (non-point load) -		
Pearl River	362,300	83.8
Pelahatchie Creek	39,540	9.1
Fannegusha Creek	19,535	4.5
b. Minor tributaries & immediate drainage (non-point load) -	1,700	0.4
c. Known municipal STP's -		
Pelahatchie "A"	170	<0.1
Pelahatchie "B"	3,395	0.8
Carthage	3,435	0.8
d. Septic tanks* -	15	<0.1
e. Known industrial - None	-	-
f. Direct precipitation** -	2,125	0.5
Total	432,215	100.0

2. Outputs -

Lake outlet - Pearl River 194,310

3. Net annual P accumulation - 237,905 kg.

* Estimate based on 60 lakeshore dwellings; see Working Paper No. 175.
** See Working Paper No. 175.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/yr	% of total
a. Tributaries (non-point load) -		
Pearl River	2,817,755	82.9
Pelahatchie Creek	250,780	7.4
Fannegusha Creek	156,000	4.6
b. Minor tributaries & immediate drainage (non-point load) -	13,550	0.4
c. Known municipal STP's -		
Pelahatchie "A"	225	<0.1
Pelahatchie "B"	17,755	0.5
Carthage	10,310	0.3
d. Septic tanks* -	640	<0.1
e. Known industrial - None	-	-
f. Direct precipitation** -	131,075	3.9
Total	3,398,090	100.0

2. Outputs -

Lake outlet - Pearl River 2,649,010

3. Net annual N accumulation - 749,080 kg.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km^2/yr	kg N/km^2/yr
Pearl River	52	408
Pelahatchie Creek	74	472
Fannegusha Creek	100	797

* Estimate based on 60 lakeshore dwellings; see Working Paper No. 175.
** See Working Paper No. 175.

E. Yearly Loads:

In the following table, the existing phosphorus loadings are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Essentially, his "dangerous" loading is one at which the receiving water would become eutrophic or remain eutrophic; his "permissible" loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic loading would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m^2/yr	3.56	1.96	28.0	6.2

Vollenweider phosphorus loadings ($g/m^2/yr$) based on mean depth and mean hydraulic retention time of Ross Barnett Reservoir:	
"Dangerous" (eutrophic loading)	1.00
"Permissible" (oligotrophic loading)	0.50

V. LITERATURE REVIEWED

Anonymous, 1971. Inventory of municipal waste facilities. EPA Publ. OWP-1, vol. 4, Wash., DC.

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VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P
2801	ARKABUTLA LAKE	0.198	0.440	485.111	6.500	15.000	0.025
2802	ENID LAKE	0.062	0.240	465.000	6.578	14.900	0.009
2804	ROSS BARNETT RESERVOIR	0.045	0.140	462.917	9.992	14.600	0.008
2805	SARDIS LAKE	0.041	0.190	447.750	6.425	14.800	0.009
2806	GRENADA LAKE	0.051	0.305	476.778	6.022	14.900	0.010

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
2801	ARKABUTLA LAKE	0 (0)	0 (0)	0 (0)	50 (2)	0 (0)	0 (0)	50
2802	ENID LAKE	25 (1)	50 (2)	50 (2)	25 (1)	38 (1)	63 (2)	251
2804	ROSS BARNETT RESERVOIR	75 (3)	100 (4)	75 (3)	0 (0)	100 (4)	100 (4)	450
2805	SARDIS LAKE	100 (4)	75 (3)	100 (4)	75 (3)	75 (3)	63 (2)	488
2806	GRENADA LAKE	50 (2)	25 (1)	25 (1)	100 (4)	38 (1)	25 (1)	263

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	2805	SARDIS LAKE	488
2	2804	ROSS BARNETT RESERVOIR	450
3	2806	GRENADA LAKE	263
4	2802	ENID LAKE	251
5	2801	ARKABUTLA LAKE	50

APPENDIX B

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR MISSISSIPPI 02/18/76

LAKE CODE 2804 ROSS BARNETT RESERVOIR

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 7770.0

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
2804A1	6904.9	141.87	230.78	196.52	191.14	97.98	36.81	44.17	21.89	11.50	10.28	27.81	83.25	90.29
2804A2	7200.2	147.98	240.55	205.01	199.21	102.28	38.40	46.21	22.85	11.98	10.70	29.00	86.76	94.16
2804A3	7770.0	161.69	256.83	246.64	222.57	118.36	44.17	52.10	26.36	13.48	12.26	32.85	95.99	106.03
2804B1	608.6	7.79	19.99	15.80	14.87	9.68	2.69	2.80	1.13	1.42	1.56	4.05	3.43	7.01
2804B2	530.9	6.80	17.44	13.79	12.97	8.44	2.35	2.44	0.99	1.25	1.36	3.54	3.00	6.12
2804C1	195.8	5.47	6.14	5.69	5.58	3.20	0.62	1.19	0.21	0.09	0.21	0.93	2.38	2.62
2804ZZ	72.5	0.93	2.38	1.90	1.78	1.16	0.31	0.34	0.14	0.17	0.20	0.48	0.40	0.84

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 7770.0
SUM OF SUB-DRAINAGE AREAS = 15513.1

TOTAL FLOW IN = 2436.41
TOTAL FLOW OUT = 1283.32

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
2804A1	8	73	28.88	22	20.08				
	9	73	11.16	21	7.14				
	10	73	16.51	21	16.34				
	11	73	77.30	23	117.51				
	12	73	297.33	22	155.46				
	1	74	648.46	21	538.02				
	2	74	373.78	25	356.79				
	3	74	123.74	22	131.11				
	4	74	416.26	22	205.86				
	5	74	62.86	24	21.15				
	6	74	97.98	23	53.52				
	7	74	41.63	22	21.07				
	8	74	16.28	23	10.45				
2804A2	8	73	30.02	22	20.93				
	9	73	11.61	21	7.45				
	10	73	17.22	21	17.02				
	11	73	80.42	23	122.61				
	12	73	308.65	22	162.26				
	1	74	676.77	21	563.51				
	2	74	390.77	25	373.78				
	3	74	129.12	22	136.77				
	4	74	436.08	22	214.64				
	5	74	65.41	24	22.06				
	6	74	102.22	23	55.78				
	7	74	43.32	22	21.97				
	8	74	16.99	23	10.87				

TRIBUTARY FLOW INFORMATION FOR MISSISSIPPI 02/18/76

LAKE CODE 2804 ROSS BARNETT RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
2804A3	8	73	28.32	22	45.87				
	9	73	18.21	21	16.89				
	10	73	17.75	21	28.60				
	11	73	79.29	23	106.47				
	12	73	291.66	22	158.01				
	1	74	767.39	21	673.94				
	2	74	515.37	25	555.01				
	3	74	123.46	22	101.94				
	4	74	461.56	22	515.37				
	5	74	55.50	24	24.18				
	6	74	94.01	23	25.71				
	7	74	23.16	22	18.69				
	8	74	16.96	23	11.07				
280481	8	73	3.40	22	2.86				
	9	73	0.79	21	0.24				
	10	73	1.87	21	0.71				
	11	73	10.90	23	18.18				
	12	73	25.49	22	29.17				
	1	74	49.84	21	70.79				
	2	74	32.56	25	14.19				
	3	74	6.48	22	7.62				
	4	74	39.93	22	11.10				
	5	74	2.80	24	0.91				
	6	74	6.31	23	9.32				
	7	74	0.79	22	0.85				
	8	74	1.87	23	0.48				
280482	8	73	2.97	22	2.49				
	9	73	0.68	21	0.20				
	10	73	1.64	21	0.62				
	11	73	9.51	23	15.86				
	12	73	22.23	22	25.49				
	1	74	43.61	21	61.73				
	2	74	28.32	25	12.37				
	3	74	5.66	22	6.65				
	4	74	34.83	22	9.68				
	5	74	2.44	24	0.79				
	6	74	5.52	23	8.13				
	7	74	0.68	22	0.74				
	8	74	1.64	23	0.42				
2804C1	8	73	0.91	22	0.74				
	9	73	0.06	21	0.0				
	10	73	0.40	21	0.06				
	11	73	3.23	23	5.52				
	12	73	8.01	22	9.20				
	1	74	16.00	21	22.74				
	2	74	9.85	25	4.25				
	3	74	1.87	22	2.21				
	4	74	12.77	22	3.28				
	5	74	0.71	24	0.11				
	6	74	1.84	23	2.75				
	7	74	0.06	22	0.08				
	8	74	0.40	23	0.11				

TRIBUTARY FLOW INFORMATION FOR MISSISSIPPI 02/18/76

LAKE CODE 2804 ROSS BARNETT RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
2804ZZ	8	73	0.40	22	0.34				
	9	73	0.08	21	0.03				
	10	73	0.23	21	0.08				
	11	73	1.30	23	2.15				
	12	73	3.03	22	3.48				
	1	74	5.95	21	8.44				
	2	74	3.88	25	1.70				
	3	74	0.76	22	0.91				
	4	74	4.76	22	1.33				
	5	74	0.34	24	0.11				
	6	74	0.76	23	1.10				
	7	74	0.08	22	0.11				
	8	74	0.23	23	0.06				

APPENDIX D

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 76/02/18

280401
25 23 52.0 090 01 06.0 3
ROSS BARNETT RESERVOIR
28121 MISSISSIPPI

11EPALES 2111202
0029 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/14	16 30	0000	29.6		28	65	6.90J	19	0.180	1.500	0.140	0.018
	16 30	0006	28.2	5.0		71	6.70J	18	0.170	0.800	0.140	0.021
	16 30	0015	25.4	1.4		75	6.40J	19	0.310	0.800	0.160	0.028
	16 30	0025	23.7	0.8		122	6.30J	25	0.550	1.100	0.160	0.097
73/08/27	15 05	0000	29.9		34	66	7.90	20	0.080	1.100	0.060	0.009
	15 05	0005	29.5	7.8		68	7.50	20	0.060	0.800	0.070	0.006
	15 05	0015	27.4	3.2		68	7.20	21	0.130	0.800	0.050	0.008
	15 05	0026	26.8	0.4		70	6.80	30	0.240	1.400	0.060	0.018
73/11/02	10 10	0000	17.5		36	63	7.30	21	0.040	0.700	0.040	0.006
	10 10	0005	17.4	8.8		63	7.20	20	0.030	0.600	0.030	0.009
	10 10	0010	17.2	8.2		66	7.20	20	0.040	0.600	0.040	0.012

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/14	16 30	0000	0.091	6.6
	16 30	0006	0.090	
	16 30	0015	0.106	
	16 30	0025	0.246	
73/08/27	15 05	0000	0.045	14.9
	15 05	0005	0.045	
	15 05	0015	0.043	
	15 05	0026	0.048	
73/11/02	10 10	0000	0.046	11.8
	10 10	0005	0.047	
	10 10	0010	0.044	

J VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 76/02/18

280402
25 23 32.0 090 03 48.0 3
ROSS BARNETT RESERVOIR
28121 MISSISSIPPI

11EPALES 2111202
0042 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/14	17 00	0000	27.9		33	45	6.80J	13	0.160	0.900	0.110	0.010
	17 00	0006	27.8	5.3		48		14	0.170	0.600	0.130	0.011
	17 00	0015	25.8	3.4		49	6.20J	15	0.190	0.600	0.120	0.011
	17 00	0026	25.6	3.0		50	6.00J	14	0.250	0.700	0.150	0.017
	17 00	0038	25.1	2.6		55	6.00J	17	0.310	0.800	0.150	0.018
73/08/27	13 00	0000	29.5		52	63	7.20	16	0.060	1.200	0.060	0.005
	13 00	0005	28.8	7.6		62	7.30	17	0.040	1.100	0.040	0.004
	13 00	0015	27.6	3.3		62	7.10	19	0.120	1.200	0.050	0.006
	13 00	0025	27.1	2.6		62	6.20	19	0.130	1.100	0.040	0.006
	13 00	0035	26.9	2.4		66	6.40	19	0.170	1.100	0.040	0.011
73/11/02	09 51	0000	19.1		39	50	7.10	16	0.060	0.600	0.040	0.007
	09 51	0005	19.1	8.0		50	7.00	15	0.050	0.500	0.040	0.008
	09 51	0015	18.9	7.8		50	6.90	15	0.050	0.500	0.040	0.008
	09 51	0036	18.9	7.6		50	6.90	14	0.060	0.500	0.040	0.008

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/14	17 00	0000	0.063	3.4
	17 00	0006	0.060	
	17 00	0015	0.066	
	17 00	0026	0.069	
	17 00	0038	0.081	
73/08/27	13 00	0000	0.025	12.1
	13 00	0005	0.024	
	13 00	0015	0.024	
	13 00	0025	0.027	
	13 00	0035	0.027	
73/11/02	09 51	0000	0.035	9.1
	09 51	0005	0.038	
	09 51	0015	0.037	
	09 51	0036	0.034	

J VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 76/02/18

280403
25 26 52.0 090 02 42.0 3
ROSS BARNETT RESERVOIR
28121 MISSISSIPPI

11EPALES 2111202
0017 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/15	10 50	0000	28.3		28	59	6.80J	10K	0.170	1.300	0.110	0.010
	10 50	0006	28.3	7.5		58	6.60J	9	0.150	0.500	0.100	0.006
	10 50	0013	27.4	6.3		60	6.30J	11	0.190	0.600	0.130	0.011
73/08/27	12 15	0000	29.2		48	63	7.20	16	0.070	1.400	0.070	0.006
	12 15	0005	28.7	6.8		63	7.30	18	0.050	0.900	0.060	0.005
	12 15	0015	28.1	5.8		63	7.30	18	0.080	0.900	0.060	0.006
73/11/02	09 37	0000	18.8		42	49	7.10	15	0.040	0.600	0.040	0.007
	09 37	0005	18.7	8.4		50	7.10	16	0.040	0.500	0.040	0.009
	09 37	0015	18.7	8.4		52	7.10	17	0.040	0.500	0.050	0.007

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/15	10 50	0000	0.061	4.5
	10 50	0006	0.059	
	10 50	0013	0.061	
73/08/27	12 15	0000	0.029	13.9
	12 15	0005	0.029	
	12 15	0015	0.027	
73/11/02	09 37	0000	0.037	12.4
	09 37	0005	0.038	
	09 37	0015	0.037	

K VALUE KNOWN TO BE LESS THAN INDICATED

J VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 76/02/18

280404
25 29 15.0 089 59 45.0 3
ROSS BARNETT RESERVOIR
28121 MISSISSIPPI

11EPALES 2111202
0018 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/15	11 30	0000	29.8		28	64	8.00	10K	0.180	0.900	0.120	0.007
	11 30	0006	29.1	6.8		62	7.70	10K	0.210	0.600	0.130	0.007
	11 30	0014	26.8	2.9		64	7.30	11	0.300	0.800	0.140	0.019
73/08/27	11 45	0000	28.2		40	59	7.00	20	0.070	1.200	0.040	0.008
	11 45	0005	27.8	5.8		59	7.00	14	0.060	0.900	0.040	0.006
	11 45	0015	27.0	5.6		58	7.20	15	0.070	0.800	0.060	0.006
73/11/02	09 22	0000	18.0		37	49	7.10	16	0.050	0.700	0.050	0.009
	09 22	0005	17.9	8.6		48	7.00	16	0.030	0.600	0.040	0.009
	09 22	0014	17.7	8.6		45	7.00	16	0.040	0.800	0.040	0.007

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/15	11 30	0000	0.067	9.1
	11 30	0006	0.068	
	11 30	0014	0.081	
73/08/27	11 45	0000	0.022	11.9
	11 45	0005	0.026	
	11 45	0015	0.045	
73/11/02	09 22	0000	0.046	10.2
	09 22	0005	0.042	
	09 22	0014	0.043	

K VALUE KNOWN TO BE
LESS THAN INDICATED

APPENDIX E

TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 76/02/23

2804A1
32 35 00.0 089 51 35.0 4
PEARL RIVER
28161 15 SHARON
I/ROSS BARNETT RES
BANK APPROACH FROM REST AREA
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/08/22	13 35		0.190	0.520	0.021	0.040	0.110
73/09/21	13 30		0.115	0.675	0.023	0.022	0.140
73/10/21	16 00		0.300	1.600	0.079	0.060	0.280
73/11/23	12 00		0.320	0.800	0.070	0.095	0.270
73/12/22	12 00		0.260	2.200	0.580	0.090	0.220
74/01/21	12 35		0.056	0.400	0.060	0.035	0.080
74/02/25	12 30		0.088	0.800	0.050	0.040	0.105
74/03/22	11 35		0.124	0.600	0.045	0.030	0.095
74/04/22	11 02		0.048	0.600	0.065	0.030	0.035
74/05/24	11 55		0.060	0.600	0.024	0.025	0.075
74/06/23			0.120	0.400	0.035	0.020	0.067
74/07/22	18 40		0.032	0.500	0.030	0.015	0.035
74/08/23	11 40		0.032	0.700	0.055	0.025	0.090

STORET RETRIEVAL DATE 76/02/23

2804A2
32 30 50.0 089 56 27.0 4
PEARL RIVER
28 15 SHARON
I/ROSS BARNETT RES
HWY 43 BRDG 5 MI NW OF SAND
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/08/22	13 17		0.028	0.600	0.010	0.020	0.055
73/09/21	12 45		0.010K	1.500	0.047	0.006	0.085
73/10/21	15 37		0.126	2.500	0.081	0.025	0.200
73/11/23	11 35		0.168	2.000	0.518	0.045	0.100
73/12/22	11 35		0.168	1.200	0.510		0.118
74/01/21	12 12		0.076	3.900	0.230	0.040	0.085
74/02/25	12 10		0.080	0.800	0.050	0.040	0.110
74/03/22	11 10		0.116	0.600	0.035	0.025	0.085
74/04/22	10 45		0.040	0.600	0.065	0.030	0.040
74/05/24	09 25		0.068	0.800	0.025	0.020	0.080
74/06/23	12 50		0.032	0.600	0.060	0.020	0.085
74/07/22	18 15		0.012	0.500	0.015	0.010	0.030
74/08/23	11 20		0.008	0.400	0.050	0.010	0.055

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/02/23

2804A3
32 23 48.0 090 03 45.0 4
PEARL RIVER
28 7.5 MADISON
O/ROSS BARNETT RES
HWY 468 BRDG LEVEE OBSV TWR AT SPILLWAY
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/08/22	10 03		0.023	0.380	0.007	0.013	0.030
73/09/21	08 40		0.010K	1.650	0.038	0.005K	0.070
73/10/21	14 30		0.011	1.100	0.033	0.010	
73/11/23	09 45		0.028		0.135	0.020	0.040
73/12/22	09 25		0.124	0.700	0.185	0.040	0.080
74/01/21	10 30		0.056	0.500	0.105	0.035	0.065
74/02/25	10 30		0.120	0.700	0.045	0.035	0.115
74/03/22	09 30		0.076	0.500	0.022	0.020	0.070
74/04/22	11 15		0.036	0.600	0.050	0.030	0.045
74/05/24	09 45		0.028	0.600	0.045	0.015	0.065
74/06/23	11 35		0.020	0.700	0.045	0.005	0.045
74/07/22	16 35		0.004	0.500	0.015	0.005	0.010
74/08/23	10 20		0.016	0.500	0.050	0.005	0.035

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/02/23

280481
32 23 20.0 090 02 52.0 4
PELAHATCHIE CREEK
28 7.5 MADISON
T/ROSS BARNETT RES
ON PIER 25 FT FROM SHORE AT CREEK MOUTH
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/08/22	10 17		0.021	0.460	0.006	0.011	0.037
73/09/21	08 50		0.010K	1.050	0.033	0.008	0.090
73/10/21	14 40		0.015	0.750	0.022	0.015	
73/11/23	09 50		0.036		0.150	0.010	0.030
73/12/22	09 40		0.184	1.700	0.165	0.045	0.115
74/01/21	10 55		0.068	0.500	0.055	0.045	0.075
74/02/25	10 45		0.156	0.800	0.055	0.050	0.185
74/03/22	09 40		0.068	0.300	0.020	0.020	0.020
74/04/22	12 10		0.048	0.700	0.075	0.030	0.045
74/05/24	09 55		0.020	0.600	0.035	0.015	0.065
74/06/23	11 45		0.024	0.500	0.030	0.015	0.060
74/07/22	16 45		0.004	0.500	0.025K	0.010	0.015
74/08/23	10 30		0.032	0.500	0.055	0.005	0.035

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/02/23

280482
32 23 20.0 089 58 05.0 4
PELAHATCHIE CREEK
28 15 PELAHATCHIE
T/ROSS BARNETT RES
HWY 471 BRDG 2.5 MI S OF FANIN
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/08/22	10 40		0.019	0.500	0.006	0.011	0.055
73/09/21	09 00		0.020	1.100	0.160	0.088	0.250
73/10/21	14 55		0.294	1.300	0.140	0.290	0.560
73/11/23	10 10		0.820	3.200	0.950	0.270	0.460
73/12/22	09 55		0.520	1.200	0.280	0.230	0.380
74/01/21	11 12		0.116	0.800	0.070	0.125	0.230
74/02/25	11 00		0.250	0.900	0.085	0.075	0.175
74/03/22	10 00		0.420	0.900	0.050	0.075	0.175
74/04/22	09 15		0.224	1.200	0.035	0.045	0.105
74/05/24	10 25		0.060	0.900	0.040	0.040	0.125
74/06/23	12 00		0.036	0.700	0.030	0.030	0.100
74/07/22	17 50		0.004	0.700	0.010	0.020	0.060
74/08/23	10 40		0.008	0.700	0.060	0.025	0.095

STORET RETRIEVAL DATE 76/02/23

2804C1
32 32 48.0 089 50 00.0 4
FANNEGUSHA CREEK
28 15 SHARON
T/ROSS BARNETT RES
BRDG ON SEC RD 3 MI NE OF SAND HILL SCHO
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/08/22	12	15	0.350	1.050	0.140	0.066	0.220
73/09/21	12	25	0.010K	0.850	0.030	0.031	0.210
73/10/21	15	20	0.290	1.700	0.315	0.130	0.360
73/11/23	10	45	0.276	3.100	0.720	0.170	0.270
73/12/22	10	30	0.460	1.600	0.420	0.155	0.260
74/01/21	11	45	0.116	3.300	0.890	0.105	0.190
74/02/25	11	45	0.152	0.900	0.070	0.075	0.165
74/03/22	10	35	0.160	1.400	0.070	0.065	0.210
74/04/22	10	13	0.264	1.100	0.070	0.065	0.115
74/05/24	11	00	0.020	1.400	0.200	0.070	0.210
74/06/23	12	30	0.024	1.100	0.100	0.080	0.240
74/07/22	17	30	0.008	1.200	0.020	0.055	0.155
74/08/23	11	05	0.007	0.900	0.085	0.075	0.240

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/02/18

28048A PD28048A P000300
32 19 00.0 089 48 30.0 4
PELAHATCHIE
28 15 PELAHATCHIE
T/ROSS BARNETT RES
PELAHATCHIE RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/01	09 00		0.110	14.700	2.000	6.970	8.000		
73/06/01	10 00		0.125	28.000	0.294	8.000	11.500		
73/07/02	14 00		0.020	18.900	0.150	9.600	10.500		
73/08/01	10 00		0.520	21.000	2.200	10.600	15.700		
73/09/03	15 00		0.037	16.000			15.500	0.011	0.011
73/10/01	11 00		0.070	22.000	1.540	14.000	15.150	0.011	
73/11/01	08 15		0.070	24.000	1.540	15.000	19.000		0.011
73/11/30	11 00		0.050	11.500	0.600	9.600	10.000		0.011
73/12/31	10 15		0.200	15.500	0.940	6.800	9.600	0.011	0.011
74/02/01	11 00		0.160	7.900	0.270	4.500	5.500	0.011	
74/03/01	09 00		0.480	9.000	0.580	5.000	6.700		0.011
74/04/01	08 00		0.080	11.000	0.960	6.600	8.900		0.011
74/05/01	08 30		0.040	16.000	0.770	6.800	8.700		0.011

STORET RETRIEVAL DATE 76/02/18

2804BB P02804BB P001000
32 18 30.0 089 48 00.0 4
PELAHATCHIE
28 15 PELAHATCHIE
T/ROSS BARNETT RES
PELAHATCHIE RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/01	09 30		0.040	16.000	0.105	1.890	2.900		
73/06/01	08 30		0.125	23.500	2.340	2.860	4.300	0.559	
73/07/02	14 00		0.020	32.000	3.570	3.500	4.800		
73/08/01	09 30		0.020	22.000	5.100	3.300	5.100		
73/09/03	14 00		0.180	26.000			5.500	0.550	0.550
73/10/01	10 30		0.110	24.700	4.400	3.200	5.200	0.559	
73/11/01	08 15		0.030	26.000	5.200	3.200	5.400		0.559
73/11/30	10 30		0.020	27.000	6.500	2.700	4.600		0.559
73/12/31	09 45		0.080	26.000	1.700	1.580	4.300		0.559
74/02/01	10 30		0.160	17.000	1.480	1.560	4.800	0.559	
74/03/01	09 00		0.080	15.750	0.460	1.400	2.050		0.559
74/04/01	08 00		0.120	21.000	3.600	2.200	4.100		0.559
74/05/01	08 00		0.360	22.000	1.500	2.400	3.750		0.559